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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/580,776
Filing Date: May 26, 2006
Appellant(s): YANG ET AL.

Tatiana Rossin, Registration No.: 56,833
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 22 June 2011 appealing from the Office action mailed 07 December 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

7,374,077	Shimura	05-2008
7080098	Smirniotopoulos	07-2006
20040139043	Lei	07-2004
20030113951	Stefanescu	01-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained through the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6 and 8-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimura, Patent Number 7,374,077, in view of Smirniotopoulos et al,

Patent Number US 7,080,098 (hereinafter referred to as “Smirniotopoulos”) and further in view of Lei et al, Publication Number US 2004/0139043 (hereinafter referred to as” Lei”).

Regarding claim 1, Shimura discloses a method for retrieving medical images from various sources and in different formats, to enable the creation of teaching files and research datasets, for the building of a personal medical image library (see abstract), the method comprising:

(a) directly retrieving a plurality of medical images from various sources (e.g. the image input receives input from a plurality of client terminals (as *sources*) connected to the image input means by way of a network, col. 2, lines 49-52);

(b) storing the plurality of medical images in a database (e.g. image database which stores a number of pieces of image data representing a number of images, col. 1, line 67 through col. 2, lines 1-2);

(c) generating a database record for the teaching files and research datasets (e.g. case database 20 in Figure 1, comprises an image database 20a which stores a number of pieces of image data representing a number of images and a diagnostic database 20b which stores pieces of diagnostic data related to the pieces of image data stored in the image database 20a, col. 5, lines 33-37);

(d) generating the teaching files and research datasets file (e.g. to arrange the image database (as *research data file*) to store a number of pieces of image data together with position information representing the position of the object of the image

represented by the image data, col. 3, lines 16-19; and the "feature value" is an index on the basis of the degree of malignancy of a detected abnormal shadow, col. 2, lines 31-33);

(e) saving the teaching files and research datasets into the database (col. 5, lines 33-37); and

(f) generating at least one index of the teaching files and research datasets (e.g. the "feature value" is an index on the basis of the degree of malignancy of a detected abnormal shadow, col. 2, lines 31-33).

Shimura does not explicitly disclose the following:

(g) automatically anonymizing patient identification data when the at least one medical image is retrieved from the various sources, wherein the patient identification data comprises patient sensitive information that is not revealed publicly.

Smirniotopoulos teaches: automatically anonymizing patient identification data when the at least one medical image is retrieved from the various sources (e.g. multiple levels of security and access control schemes may be used where more sensitive information is being stored. Thus, multiple levels of privileges may be supported, such as for an author of a file, a reviewer, an editor, a guest, and system administrator. The level of privileges may also vary based upon the state of the file and the particular information being manipulated. When using multi-level access control, user could be restricted to visitor status with respect to portions of the file. The system may be designed to mask or options within a given process for which a user does not have sufficient privileges, col. 3, lines 37-67 through col. 4, lines 1-7), wherein the patient

identification data comprises patient sensitive information that is not revealed publicly (e.g. even though a person acted as both author and editor of a given file, it is possible that after approval he could be restricted to visitor status with respect to certain file access, and may lack even these privileges with respect to portions of the file, such as sensitive patient information, col. 3, lines 55-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include a medical image storage and retrieval system as shown by Smirniotopoulos in order to be balanced against the complexity of administering multilevel access (Smirniotopoulos: col. 3, lines 61-63).

Shimura and Smirniotopoulos do not explicitly disclose: wherein the automatic anonymizing of patient identification data includes replacing each item of the patient identification data with an anonymization code; and

(h) securely storing a relationship between the anonymization code and the patient identification data in a table in the database.

Lei teaches: wherein the automatic anonymizing of patient identification data includes replacing each item of the patient identification data with an anonymization code (e.g. the masking routine obtains masking value from attribute restriction metadata, replaces the data from the attribute with the masking value, integer zero. The modified data is stored in masked result set. The masked result set is then provided to user, §0074, lines 7-9 thru §0075. Wherein, the same data in the masked result set will be returned if the same restricted attributes is requested, §0076); and

(h) securely storing a relationship between the anonymization code and the patient identification data in a table in the database (e.g. The modified data is stored in masked result set, §0074, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura and a medical image storage and retrieval system disclosed by Smirniotopoulos to include a masking value as shown by Lei in order to provide a mechanism for implementing access control policies that do not suffer the all-or-nothing limitation of existing row-level access-control policy approaches, Lei: §0013).

Regarding claim 2, Shimura discloses the method further including a searching mechanism for searching the teaching files and research datasets (e.g. searching means 30 which searches the case database and judges image data, col. 5, lines 22-23 and lines 27-28)

Regarding claim 3, Shimura further discloses, the medical images are from at least one discipline selected from the group consisting of radiology, nuclear medicine, dermatology, pathology, ophthalmology, cardiology, neurology, endoscopy, angiography, biomedicine, ECG, EEG, and EMG (col. 5, lines 60-67 through col. 6, lines 1-2).

Regarding claim 4, Shimura further discloses, the method is in accordance with MIRC schema (e.g. image search system, Figure 1).

Shimura does not disclose anonymizing patient sensitive information regarding claims 6 and 8-9.

Smirniotopoulos teaches:

The patient identification data is able to be revealed to a generator of the teaching files and research datasets (e.g. the system may be designed to mask the processes or options within a given process, for which a user does not have sufficient privileges, col. 4, lines 5-7).

the anonymization code includes a prefix, a randomly generated number and a type (col. 4, lines 5-7).

the prefix is a short string of characters representing the generator of the sensitive information; and the type represents nature of the sensitive information (e.g. Figure 7 illustrates an alternative implementation in which conditional information like codes and non-private patient information are displayed for rapid browsing of the retuned results, col. 8, lines 66-67 through col. 9, lines 1-2).

Regarding claim 10, Smirniotopoulos further discloses, a check is first performed to determine if the item of sensitive information has previously been anonymized and the anonymization code previously generated; and, if yes, retrieving and using the previously generated anonymization code (col. 6, lines 53-62),

Regarding claim 11, Smirniotopoulos further discloses, the sensitive information includes one or more items selected from the group consisting of: patient's name, patient ID, other patient's names, other patient IDs, patient's birth name, patient's address, patient's telephone numbers, patient's mother's birth name, region of residence, country of residence, military rank, branch of service, patient comments, additional patient history, referring physician's name, referring physician's address , referring physician's telephone numbers, and all other person names (e.g. patient’s file, col. 3, lines 59-61).

Regarding claim 12, Smirniotopoulos further discloses, wherein, in step (c), ACR codes are entered as a result of system prompts (col. 4, lines 41-44).

Regarding claim 13, Smirniotopoulos further discloses, the ACR codes are used for the at least one index of the teaching files (col. 5, lines 60-67- col. 6, lines 1-2).

Regarding claim 14, Smirniotopoulos further discloses, indexing is by at least one selected from the group consisting of: title, abstract, keywords, authors, affiliations, contacts, patient information, radiological codes, image format, image compression status, image modality, anatomic location, and ACR codes (col. 6, lines 10-20).

Regarding claim 15, Smirniotopoulos further discloses, for internal searching, patient sensitive information is revealed, and for external searching patient sensitive information is anonymized (col. 7, lines 14-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include a medical image storage and retrieval system as shown by Smirniotopoulos in order to be balanced against the complexity of administering multilevel access (Smirniotopoulos: col. 3, lines 61-63).

Regarding claim 16, Shimura discloses, after each medical image is retrieved in step (a) it can be viewed before being stored (col. 10, lines 37-43).

Regarding claim 17, Shimura further discloses, all medical images are kept in their original format once retrieved (col. 2, lines 57-59).

Regarding claim 18, Shimura further discloses the formats include at least one selected from the group consisting of: AVW, HDR/IMG (Analyze format version 8.0 and 7.5), BMP (Windows Bitmap format), DICOM (Digital Imaging and Communications in Medicine), GIF, JPEG, JPEG 2000, PNG, PNM, PPG, RGB, RGBA, SGI, TIFF, AVW, HDR/IMG (Analyze format version 8.0 and 7.5), Animated GIF, MIRA, Muti-sliced TIFF, MOV, AVI, MP3, RM, and Waveform for ECG, EEG, EMG (e.g. it is possible to arrange the image database to store a number of pieces of image data together with related

information given thereto, col. 2, lines 57-59. It's understood that one of the formats is needed to store or save an image to image database).

Regarding claims 19 and 20, Shimura does not disclose, for two-dimensional medical

images, two additional JPEG images are generated for ease of browsing using a web browser, and for other image formats, an additional thumbnail image may be generated.

and the two additional JPEG images are of the same size as thumbnail images.

Smirniotopoulos discloses: for two-dimensional medical images, two additional JPEG images are generated for ease of browsing using a web browser, and for other image formats, an additional thumbnail image may be generated (e.g. To simplify the user's process of inputting this information a wide variety of media formats may be accepted. However, the multimedia database system preferably includes appropriate image converters for resizing or formatting the image into one of a selected group of formats for consistency. It is also desirable for the system to have the capability of automatically generating thumbnail images at this point, making subsequent display and browsing more convenient for users, col. 5, lines 16-24). Smirniotopoulos further disclose, the two additional JPEG images are of the same size as thumbnail images (see Figs. 7B, 9A and 9C).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include the capability of automatically generating thumbnail images as

shown by Smirniotopoulos in order to make subsequent display and browsing more convenient for users.

Regarding claim 21, Shimura discloses an apparatus for retrieving medical images from various sources and in various formats for creating at least one teaching file and research dataset; the apparatus comprising:

a database for storing the at least one teaching file and research dataset in a generated database record (e.g. image database which stores a number of pieces of image data representing a number of images, col. 1, line 67 through col. 2, lines 1-2),

an image retrieval interface configured to directly retrieve medical images from various sources and in different formats (e.g. the image input receives input from a plurality of client terminals (as *sources*) connected to the image input means by way of a network, col. 2, lines 49-52),

an MIRC server configured to provide an MIRC file storage service for the database (e.g. image search system (server) comprises a case database which stores images data, col. 7, lines 52-58),

a graphic user interface for operation on a user's machine to communicate with the MIRC server (col. 2, lines 46-54); and

a web server to service requests from the graphic user interface (e.g. image search system with network means an INTRANET in the hospital, internet, a leased line, and the like, col. 2, lines 47-56).

Shimura does not explicitly disclose the following: for a user's machine automatically anonymizing patient identification data based upon the at least one medical image retrieved from the various sources.

Smirniotopoulos teaches: automatically anonymizing patient identification data when the at least one medical image is retrieved from the various sources (e.g. multiple levels of security and access control schemes may be used where more sensitive information is being stored. Thus, multiple levels of privileges may be supported, such as for an author of a file, a reviewer, an editor, a guest, and system administrator. The level of privileges may also vary based upon the state of the file and the particular information being manipulated. When using multi-level access control, user could be restricted to visitor status with respect to portions of the file. The system may be designed to mask or options within a given process for which a user does not have sufficient privileges, col. 3, lines 37-67 through col. 4, lines 1-7), wherein the patient identification data comprises patient sensitive information that is not revealed publicly (e.g. even though a person acted as both author and editor of a given file, it is possible that after approval he could be restricted to visitor status with respect to certain file access, and may lack even these privileges with respect to portions of the file, such as sensitive patient information, col. 3, lines 55-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include a medical image storage and retrieval system as shown by Smirniotopoulos in order to be balanced against the complexity of administering multilevel access (Smirniotopoulos: col. 3, lines 61-63).

Shimura and Smirniotopoulos do not explicitly disclose: wherein the automatic anonymizing of patient identification data includes replacing each item of the patient identification data with an anonymization code, and wherein a relationship between the anonymization code and the patient identification data is stored securely in a table in the database;

Lei teaches: wherein the automatic anonymizing of patient identification data includes replacing each item of the patient identification data with an anonymization code (e.g. the masking routine obtains masking value from attribute restriction metadata, replaces the data from the attribute with the masking value, integer zero. The modified data is stored in masked result set. The masked result set is then provided to user, §0074, lines 7-9 thru §0075. Wherein, the same data in the masked result set will be returned if the same restricted attributes is requested, §0076), and wherein a relationship between the anonymization code and the patient identification data is stored securely in a table in the database (e.g. The modified data is stored in masked result set, §0074, line 10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura and a medical image storage and retrieval system disclosed by Smirniotopoulos to include a masking value as shown by Lei in order to provide a mechanism for implementing access control policies that do not suffer the all-or-nothing limitation of existing row-level access-control policy approaches, Lei: §0013).

Regarding claim 22, Smirniotopoulos further discloses, the database is a relational database for storage of all required information, including: database tables; database indexes; database scripts (e.g. a medical image storage and retrieval system includes a database with relationally linked tables including a disease factoid table, an image and image caption table, and a patient data table, see abstract); and pointers to the medical images, teaching files and research datasets (Fig. 7B). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include relationally linked tables as shown by Smirniotopoulos in order for rapid browsing of the results, along with appropriate links to additional information.

Regarding claim 23, Shimura discloses, wherein the server serves requests received from a user via the graphic user interface on a user's machine; the graphic user interface being for providing access functions and file editing functions (e.g. image search system with network means an INTRANET in the hospital, internet, a leased line, and the like, col. 2, lines 47-56).

3. Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimura, Patent Number 7,374,077, and further in view of Stefanescu et al., Publication Number US 2003/0013951 (hereinafter referred to as “Stefanescu”).

Regarding claims 24-29, Shimura does not disclose the following:

the image server includes at least one selected from the group consisting of: a two dimensional image loader, a three dimensional image loader, a multi-media loader and a telemetry loader.

the two-dimensional image loader is for retrieving two-dimensional still images.

the three-dimensional image loader is for retrieving three-dimensional still images.

the multi-media loader is for retrieving multi-media files (§0043, line 1-3).

the telemetry loader is for retrieving telemetry data (§0043, lines 1-3).

and

the graphic user interface includes a PMIL client as a user interface able to run in a web browser or as a stand alone application on a user's machine, and provides MIRC editing functions

Stefanescu discloses: an image database containing images pre-processed for matching. Atlas matching may be provided, such as in the atlas workspace, in which images may be retrieved that match the position (in one, two, or three reference planes) being viewed in, or selected within, a three-dimensional object displayed within the atlas (§0058, lines 5-11). Wherein, image database is included in the database server (§0043, lines 7-8); and the image database may includes an atlas workspace of user interfaces as an image loader in which images may be retrieved (§0043, lines 9-10 and §0053). Stefanescu further discloses, the graphic user interface includes a PMIL client as a user interface able to run in a web browser or as a stand alone application on a user's machine, and provides MIRC editing functions (§0053-§0054). Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the similar image search system disclosed by Shimura to include a user interface for a medical image processing system as shown by Stefanescu to distributed image processing functions in any suitable manner between a client device and one or more servers..

Regarding claim 30, Shimura further discloses, wherein the server includes an MIRC storage for providing an MIRC file storage service for the database and for the user's machine (e.g. case database 20 in Figure 1).

Regarding claim 31, Shimura further discloses, wherein the MIRC server further includes an MIRC query to provide queries as defined by the MIRC scheme (e.g. a searching means which searches the database for similitude image data representing an image which is similar to an image represented by the input search image, col. 2, lines 6-9).

Regarding claim 32, Shimura further discloses, wherein the at least one teaching file is in accordance with a Medical Imaging Resource Centre standard (col. 5, lines 55-59).

Claims 33-36 are similar to claims 17-20; therefore, claims 33-36 are rejected by the same reasons as discussed above.

Claim 37 has the same functions with claim 1. Therefore, claim 37 is rejected by the same reasons as discussed above.

(10) Response to Argument

In response to Appellants' argument on page 22 of Appeal Brief that: None of the cited references discloses "*securely storing a relationship between the anonymization code and the patient identification data in a table in the database*" as recited in claim 1.

The Examiner respectfully disagrees. As discussed in the rejections above, Lei clearly teach techniques of: "*securely storing a relationship between the anonymization code and the patient identification data in a table in the database*" (e.g. database server obtains data attributes from a database object and stores this data in the result set 235. The semantic analyzer determines that if a query des reference an attribute that is designated as restricted attribute. The masking routine obtains masking values from attribute restriction metadata, replaces the data from the attribute with the masking value, integer zero. **The modified data is stored in masked result set 233**).

Lei, paragraph 0074 (emphasis added).

Thus, while Lei can be said to describe masking data from restricted attributes by determining that query does or does not reference a restricted attribute; if the query does reference a restricted attribute, then the restricted attribute metadata will be replaced with a masking value and the modified data is stored in masked result set before provided to the user.

The explanations above also apply to the Appellants' argument, on page 22 of Appeal Brief, that: Lei does not even discloses *defining a relationship between the masking value* (anonymization code) *and the salary* (sensitive information), let alone *providing any motivation to securely storing such a relationship in a table in the database*. In additional, the Examiner respectfully submits that these steps "*defining a relationship between the masking value* (anonymization code) *and the salary* (sensitive information)", and "*providing any motivation to securely storing such a relationship in a table in the database*", are not recited in claim language; therefore, these steps are not necessary to be construed in this response.

In response to Appellants' argument on page 24 of Appeal Brief that: Lei does not disclose of suggest *storing such a relationship for possible retrieval of sensitive data later on*.

The Examiner respectfully submits that this argument is unclear and the limitation "*storing such a relationship for possible retrieval of sensitive data later on*" is not recited in claim language; therefore, the limitation is not necessary to be construed in the response.

In response to Appellants' argument C on page 26 of Appeal Brief that: *One of ordinary skill in the art would not have been motivated to combine Shimura, Smirniotopoulos, and Lee to arrive at the invention as claimed in the independent claims*.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As acknowledged by the Appellants on page 27 of the Appeal Brief:

Shimura is concerned with a system for similar image search. Shimura does not mention any problem of preventing revealing patient information to the public. Smirniotopoulos discloses multiple levels of privileges supported by the system, such that those processes or options within a given process, for which a user does not has sufficient privileges, may be masked. Smirniotopoulos is concerned with providing multiple levels of privileges to users, and Lei is concerned with controlling the access to restricted attribute by replacing the data of the restricted attribute with a masking value depending on the type of the restricted attribute. Lei is concerned with preventing revealing data of restricted attribute to a user without accessing right. Thus, motivation to combine Shimura, Smirniotopoulos and Lei comes from the fact that it is old and well known in the art to combine.

It is respectfully submitted that the combination Shimura, Smirniotopoulos and Lei does teach or suggest each and every feature set forth in independent claim 1, also apply to independent claims 21 and 37 because claim 1 is representative of independent claims 21 and 37.

For the above reasons, It is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/Cecile Vo/
Patent Examiner
Art Unit 2169(a)
August 18, 2011

Conferees:

/Tony Mahmoudi/

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